

COURSE REPORT

TRAINING OF TRAINERS ON REVEGETATION OF FORMER MINING AREAS

East Kalimantan, Indonesia
July 24-29, 2017

Training Organized by:

Environmental Leadership & Training Initiative (ELTI)

Center for Education & Training of Environment & Forestry Human Resources (PUSDIKLAT)



Background: Mining is a large industry and cause of environmental degradation in Indonesia. In the province of East Kalimantan, for example, there are approximately three million hectares of coal mine concessions. Mining operations not only impact the mine sites themselves, but also affect areas downstream through toxic run-off, river sedimentation, landslides, and flash floods. While government regulations call for the progressive rehabilitation of mined areas to mitigate these impacts, the technical knowledge of how to rehabilitate mine sites is not widely understood.

The Ministry of Environment & Forestry (MOEF) maintains a total of six Training Centers (Balai Diklat) located throughout Indonesia (i.e., Pematang Siantar, Pekanbaru, Bogor, Samarinda, Makassar, and Kupang). These MOEF centers are tasked with providing a variety of training programs, including mine site rehabilitation, for government extension workers and community, non-government, and private sector actors interested in upgrading their skills and knowledge. The six Training Centers are overseen by PUSDIKLAT, a central agency



Dr. Ishak Yassir discussing feedback received from the Ministry of Energy & Mineral Resources during a recent mine inspection visit.

of the MOEF, which is responsible for ensuring that center instructors are up-to-date on policy changes and new technical approaches to mine site rehabilitation. PUSDIKLAT, however, has limited expertise in mine site rehabilitation and limited resources to conduct an adequately thorough training.

To address this problem, a representative from PUSDIKLAT who had previously participated in an ELTI course requested assistance from ELTI to hold a train-the-trainer course for MOEF Training Center staff on mine site rehabilitation, focusing most heavily on revegetation—one aspect of the rehabilitation process. ELTI worked with its partners from the MOEF Natural Resource Conservation Technology Research Center (Balitek-KSDA) to facilitate a field trip to the PT Singlurus Pratama mine site, so that the Training Centers' teaching staff could receive up-to-date information from both researchers and practitioners actively working on mine site rehabilitation. The first two days of the training were held at the Training Center in Samarinda, while the second two days were held at Bukit Bangkirai, an eco-tourism facility managed by PT Inhutani I and located near the PT Singlurus Pratama mine site.

Objectives:

As a training of trainers, the goal of the course was to prepare the participants to be able to conduct trainings on mine site rehabilitation as soon as they returned to their respective Training Centers. More specifically, it was intended that participants would have developed the following skills:

- Discuss activity planning in mine site rehabilitation related to the Environmental Impact Assessment;
- Provide insights into the appropriate choice of species for mine site revegetation in production and protection areas;
- Discuss the techniques for and stages in mine site rehabilitation; and
- Prepare the basic materials needed to teach revegetation in mine site rehabilitation.



Presentation on mine site rehabilitation by Mr. Wasodo



Small-group work on rehabilitation planning for production forest areas



Discussion about mine planning and rehabilitation by PT Singlurus Pratama staff

Course Outline:

Day 1

The training formally started with an opening ceremony with remarks by Dr. Edi Kurniadi (Head of the Samarinda Training Center), Dr. David Neidel (ELTI-Asia Program Coordinator), and Tri Mulyono (Head of PUSDIKLAT). Mr. Wasodo (Vice-Director at the MOEF Directorate of Soil and Water Conservation) gave a presentation that outlined the government policies related to mined land reclamation and rehabilitation. A key distinction made was mining that took place within the official forestry estate under the “pinjam-pakai” system and mining that took place in non-forested areas. Dr. Triyono Sudarmadji & Dr. Wahjuni Hartati (both lectures from Mulawarman University) then gave an overview on mine operations, the environmental impact of mines, as well as rehabilitation planning, including land preparation, nursery establishment, acquiring planting materials, planting, and maintenance. An important point emphasized was that rehabilitation has to be integrated into mine planning from the very beginning in order for it to be carried out efficiently and effectively. Finally, Mr. Sumaryanto (Head of Mining for PT. Singlurus Pratama) provided more detailed information about the finer points of rehabilitation planning and monitoring by discussing operations at PT Singlurus Pratama.

Day 2

The second day of training started with a quick review of the lessons learned from the previous day. Dr. Ishak Yassir (Senior researcher at Balitek-KSDA) then gave a brief introduction to revegetation before dividing participants into three groups. The groups were assigned the task of designing a revegetation strategy based on the legal status of the land: non-forest land, protection forest, and production forest. Each group then presented their strategies and



Dr. Ishak Yassir describing the relative advantages of different native trees for revegetation



Dr. Arbainsyah pointing to a bird nest in a reclamation site



Mine revegetation site using native trees at PT Singlurus Pratama

received input both from other participants as well as course instructors. Afterwards, Dr. Yassir provided a detailed presentation on choosing appropriate tree species for different forest rehabilitation strategies, as well as synergizing with nature as a way to make revegetation more effective and efficient. After lunch, Mr. Ropinus Ligo, a mining consultant at PT Unitek Borneo who has worked on mine site rehabilitation across Indonesia, presented information on revegetation techniques and stages of implementation.

Day 3

Training participants departed from the Samarinda Training Center to travel to Bukit Bangkirai, located 2½ hours away. After a safety induction, participants visited the PT Singlurus Pratama mine site. At the first location, Stievanus Kalangie (a mine employee) described the process of mine planning and rehabilitation. Several issues, including the existence of an unintended void and landslide, were discussed. Participants also visited a five-hectare rehabilitation site, consisting of a mixture of fast-growing exotics, fruit trees, and native timber trees, which was funded by the Government of Korea. At the second location, Dr. Ishak Yassir introduced participants to an experimental site where nine species of native trees were being monitored. Aside from the relative performance of the tree species themselves, discussion also revolved around the various traits of different cover crops, natural dispersal of trees from surrounding forests, and the presence and important role of wildlife in dispersing additional tree species into the site.

After lunch, participants visited a third location where they compared the performance of two rehabilitation sites: one using *Paraserianthes falcataria*, an exotic species, and one using a mixture of two native species, *Vitex pinnata* and *Schima wallichii*, as nurse trees. A



Director General from the Indonesian Ministry of Energy & Mineral Resources had recently inspected these sites so discussion revolved around additional requirements for successful rehabilitation beyond those formally stated in the regulations. Participants then visited the PT Singlurus Pratama nursery and learned about nursery management and the creation and use of biochar as a soil amendment. Finally, participants visited a passive waste-water treatment plant funded by the Korean Government.

Day 4

Dr. Arbainsyah (ELTI Indonesia Program Assistant) & Dr. Neidel started the day by providing a brief presentation on the ELTI Leadership Program as a way to stimulate ideas on potential demonstration site development at the various Training Centers. Participants were then divided into four groups, based on different stages of the rehabilitation process including: revegetation planning, choosing species and preparing seedlings, techniques and stages of revegetation, and monitoring & evaluation. Each group was asked to develop presentations outlining necessary teaching materials including: major & minor issues for discussion, important points to be covered, and instructional methods for each topic. Each group then presented the outcome of their discussions and received feedback from other participant groups as well as resource people.



Day 5

Participants completed a training evaluation and then broke into their respective groups again to integrate input from the previous evening into their teaching materials. Dr. Neidel (ELTI), Dr. Kurdiani (Samarinda Training Center), and Mr. Burhanuddin (PUSDIKLAT), who had served as facilitator throughout the training, presided over the formal closing ceremony for the training.



Group photo of training participants and organizers

Participants: The training was attended by twenty participants. Eighteen of the participants were instructors from the regional Training Centers who will be responsible for giving future trainings on mine site rehabilitation. The other two participants were from the Center for the Management of the Kalimantan Ecoregion (Pusat Pengelolaan Ekoregion Kalimantan), a regional office of the MOEF tasked with managing environmental impacts of development.

Follow-up: All of the participants actively took part in the five-day training until the end. During the closing ceremony, participants from each Training Center explained how they planned to put their newly acquired knowledge from this training into practice over the next six months to one year. Besides holding trainings, several participants expressed interest in building relations with local mining companies, as well as establishing demonstration sites with support from the ELTI Leadership Program. ELTI and PUSDIKLAT will continue to interact with this training's participants through a WhatsApp chat group and monitor their progress. ELTI and a trainer from Samarinda Training Center are also discussing holding a training together for the management of a local Forest Management Unit in November 2017.

This event was possible thanks to Arcadia Fund, whose Environmental Conservation grants support programmes that protect and enhance biodiversity, and provide field training and academic research.